Davis-Houk, Inc.
Mechanical Contracting

PO Box 17022
Urbana, IL 61803
Phone: (217)239-0040
Fax: (217)239-0042

Submittal Review Sheet

Date: February 12, 2013

Project: Lake Land College – Northeast Building

Contract: HVAC

To: CTS

Attn: Gregg Gottman, Dave Ortmann & Frank Vassalo

Quantity	Spec Section	Description	Submittal #
1		Fan Coil Units – Northeast Building	27

■ NO EXCEPTION TAKEN
☐ MAKE CORRECTIONS NOTED
☐ REJECTED
☐ REVISE AND RESUBMIT
☐ SUBMIT SPECIFIED ITEM

Davis-Houk Mechanical Inc.

Date: February 12, 2013
By: Chris Rennels

A/E STAMP

HABEGGER CORPORATION
2220 W. ALTORFER DR.
PEORIA, IL 61615
(P) 309-691-4900
(F) 309-693-2665

SUBMITTAL

Attention:	CHRIS RENNELS	Date:	02/12/2013
Fax Number:	(217) 239-0042	Job Number:	P090512A1
Account:	111790	Engineer:	CM ENGINEERING
Customer:	DAVIS HOUK MECHANICAL	Project:	LAKELAND COLLEGE- NORTH EAST HALL
Address:	1212 E. UNIVERSITY URBANA, IL 61803	Project Location:	5001 LAKE LAND BLVD MATTOON, IL 61938

WE WISH TO PROPOSE THE FOLLOWING EQUIPMENT FOR YOUR CONSIDERATION.

Spec Section	Mark For	Qty	Model Number	Description
238101	FC-1 3A 3B 29A 29B 31	6	42WKN12EM	Hydronic Cassette Fan Coil Units 20000 BTU Cooling
	FC-2 15A 15B 16A 16B 30	6	42WKN08EM	Hydronic Cassette Fan Coil Units 13000 BTU Cooling
	FC-89 93 94A 94B 97A 97B 98	7	42VEA02BLCY5AYYY	Vertical, Lo-Boy, Cabinet Fan Coil Unit 200 CFM Cooling 120-1-60

.

Respectfully,

Jack Dunn
RPA

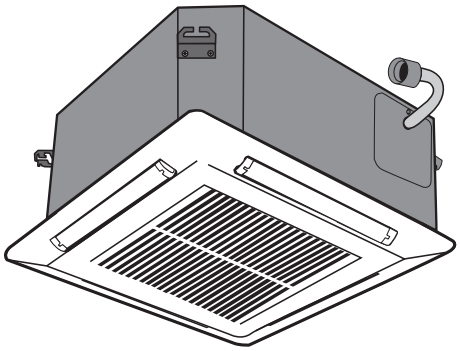
309-696-1102 - Phone
309-693-2665 - Fax
jackdunn@habeggercorp.com

Product Data

AIRSTREAM™ 42WKN08-36 Hydronic Ceiling Cassettes

$^3/_4$ to 3 Nominal Tons

AIRSTREAM™



UNIT SIZES 08-12

Hydronic ceiling cassette units offer:

- 6 chilled water cooling models to properly match job
- Optional electric heat or hot water coil
- Wall-mounted thermostat
- Installation cost savings through use of exisiting piping and/or wiring
- Low noise level construction
- Optional microprocessor based controller with infrared transmitter

Features/Benefits

Ceiling cassette units make each served area an independent controlled temperature zone to suit diverse requirements.

Construction

Cases are constructed of lightweight galvanized sheet steel with integral fan mounting rails for added strength. Fire resistant foam insulation (rated to UL94 VO) is fitted internally to provide both thermal and acoustic insulation.

The pearl-gray fascia is constructed of high-impact polystyrene.

Chilled water coil

Units utilize large surface area coils positioned to optimize heat transfer and airflow. Each coil is manufactured from copper tubes with mechanically bonded aluminum fins and is circuited from headers to ensure low water pressure drops.

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Project Name:	Run:	FC-2 15 16 30	FC-1 3 29 31
Customer:	Product	Cassette®	Cassette®
Engineer:	Model	CCW2/8 2-Pipe	CCW2/12 2-Pipe

Cooling Mode:			
System Inputs			
Coil On Mixed Temp (DB / WB)	[F / F]	75 / 63	75 / 63
Coil On Relative Humidity (RH)	[%]	51.6%	51.6%
Coil On Airflow	[SCFM]	260	260
Entering Water Flow	[GPM]	1.2	1.7
Entering Water Temperature	[F]	42	42
Glycol Concentration	[%]	None	None
System Performance			
Total Capacity	[Btu/Hr]	5,495	8,112
Sensible Capacity	[Btu/Hr]	4,707	5,988
Leaving Air Temp (DB/WB)	[F / F]	58.3 / 55.9	53.8 / 52.2
Leaving Air Relative Humidity (RH)	[%]	87%	90%
Leaving Airflow	[ACFM]	257	254
Leaving Water Temp	[F]	51.2	51.5
Coil Water Pressure Loss	[ftwg] / [psi]	7.2 / 3.1	4.3 / 1.9

Heating Mode:			
System Inupts			
Coil On Mixed Temp (DB)	[F]	60	60
Coil On Airflow	[SCFM]	260	260
Entering Water Flow	[GPM]	1.2	1.7
Entering Water Temperature	[F]	180	180
Glycol Concentration	[%]	None	None
System Performance			
Total Capacity	[Btu/Hr]	19,164	23,555
Leaving Air Temp (DB)	[F]	127.9	143.5
Leaving Airflow	[ACFM]	309	330
Leaving Water Temp	[F]	148.1	152.3
Coil Water Pressure Loss	[ftwg] / [psi]	5.2 / 2.3	3.3 / 1.4

Notes:

Pressure drops are coil only excluding valves.

Physical data

42WKN UNIT SIZE	08	12	18	20	33	36
NOMINAL TONS	3/4	1	1 1/2	1 3/4	2 1/2	3
COOLING CAPACITY (Btuh)	6,601	11,091	17,592	19,087	29,722	35,258
DIMENSIONS/WEIGHTS						
Height – Chassis/Fascia (in.) (not additive)	11 3/4 / 1 1/4	11 3/4 / 1 1/4	11 / 1 3/4	11 / 1 3/4	13 / 1 3/4	13 / 1 3/4
Width – Chassis/Fascia (in.)	22 1/2 / 25	22 1/2 / 25	33 1/4 / 37	33 1/4 / 37	45 1/2 / 49 1/4	45 1/2 / 49 1/4
Depth – Chassis/Fascia (in.)	22 1/2 / 25	22 1/2 / 25	33 1/4 / 37	33 1/4 / 37	33 1/4 / 37	33 1/4 / 37
Weight – Chassis/Fascia (lb)	40 / 5	40 / 5	64 / 18	64 / 18	97 / 21	97 / 21
CHILLED WATER COIL						
Type	Finned Tube					
Quantity	1	1	1	1	1	1
Face Area (sq ft)	1.8	1.8	2.8	2.8	5.2	5.2
Nominal Airflow (cfm)						
High	350	350	630	700	970	1160
Medium	300	300	530	630	890	970
Low	260	260	500	530	785	890
Discharge	4-way	4-way	4-way	4-way	4-way	4-way
Unit Water Volume (gal)	0.29	0.29	0.45	0.45	0.79	0.79
FAN						
Type	Centrifugal					
Quantity	1	1	1	1	2	2
Diameter (in.)	12	12	15	15	14	14
Horsepower per fan (Hp)	1/8	1/8	1/8	1/8	1/8	1/8
CONNECTIONS						
Chilled Water Inlet, OD (in.)	5/8	5/8	7/8	7/8	7/8	7/8
Chilled Water Outlet, OD (in.)	5/8	5/8	7/8	7/8	7/8	7/8
Condensate, ID (in.)	3/8	3/8	3/8	3/8	3/8	3/8
FILTRATION						
Type	Cleanable Wire Framed					
Quantity	1	1	2	2	3	3
Arrestance	80%	80%	80%	80%	80%	80%
CONDENSATE PUMP						
Maximum Head (in.)	30	30	30	30	30	30
Nominal Flow Rate (gpm)	0.1	0.1	0.1	0.1	0.1	0.1
HEATING OPTION						
Electric Heating Capacity (kW)	1.5	1.5	3.0	3.0	5.0	5.0
Hot Water Heating Capacity (Btuh)	13,799	N/A	29,258	30,946	46,455	51,600
Hot Water Coil Connection, OD (in.)	5/8	N/A	5/8	5/8	5/8	5/8
BRANCH DUCT OPTION						
Branch Duct Connections (quantity)	1-3	1-3	1-4	1-4	1-4	1-4
Branch Duct Diameter (in.)	5	5	5	5	6	6
Ducted Air Volume (cfm)	80	80	100	125	200	220
FRESH AIR OPTION						
Fresh Air Connections (quantity)	1-2	1-2	1-3	1-3	1-3	1-3
Fresh Air Duct Diameter (in.)	3	3	3	3	3	3
Fresh Air Volume (cfm)	40	40	60	65	90	95

LEGEND

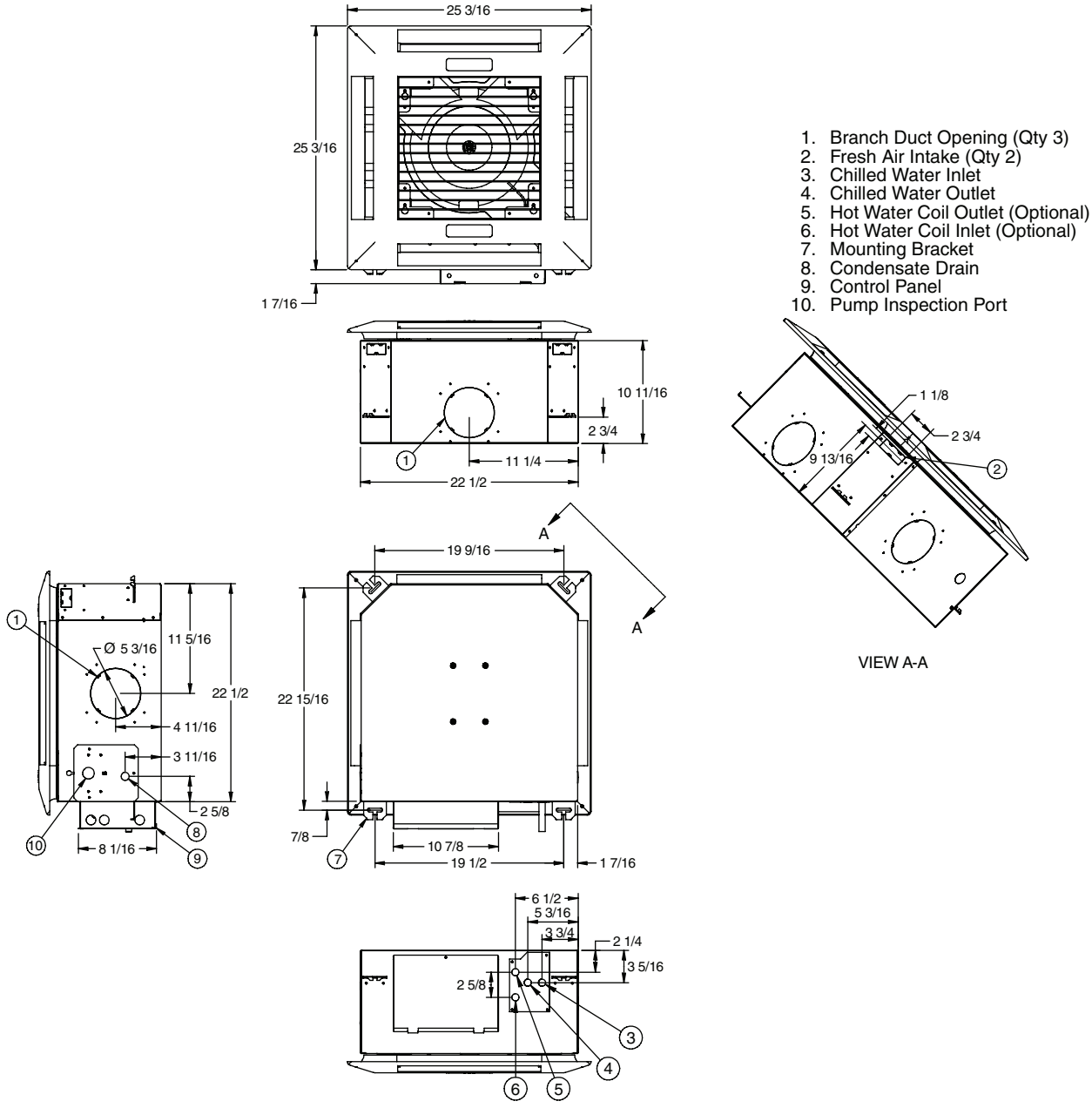
ID — Inside Diameter
N/A — Not Applicable
OD — Outside Diameter

NOTES:

1. Cooling capacity based on 80 F dry bulb/67 F wet bulb indoor and a 45 F entering/55 F leaving chilled water temperature.
2. Heating capacity based on water temperature of 180 F inlet /160 F outlet and an air temperature of 70 F dry bulb.
3. Ducted air volume based on maximum air volume available through one branch duct 6 ft long, with cassette fan(s) at high speed and corresponding fascia aperture closed.
4. Fresh air volume based on maximum fresh air through all knock-outs connected to one 10 ft long duct with fan at high speed.

Dimensions

42WKN08 AND 42WKN12 UNIT



1. Branch Duct Opening (Qty 3)
2. Fresh Air Intake (Qty 2)
3. Chilled Water Inlet
4. Chilled Water Outlet
5. Hot Water Coil Outlet (Optional)
6. Hot Water Coil Inlet (Optional)
7. Mounting Bracket
8. Condensate Drain
9. Control Panel
10. Pump Inspection Port

VIEW A-A

NOTE: Dimensions shown in inches.

Performance data (cont)

SOUND DATA

42WKN UNIT SIZE	FAN SPEED	SPL dBA	SOUND PRESSURE FREQUENCY SPECTRUM, dB						
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
08	High	29	37	37	33	29	21	14	10
	Med	26	34	34	30	24	15	12	10
	Low	22	31	29	25	17	8	10	8
12	High	35	42	41	38	35	28	21	12
	Med	32	38	39	36	32	24	16	10
	Low	29	37	37	33	29	21	14	10
18	High	43	41	45	38	40	33	25	17
	Med	39	39	41	35	36	27	19	16
	Low	38	38	40	34	34	25	18	16
20	High	46	43	47	40	43	37	29	19
	Med	43	41	45	38	40	33	25	17
	Low	39	39	41	35	36	27	19	16
33	High	48	51	49	46	42	34	22	19
	Med	44	50	46	43	38	28	18	17
	Low	42	49	44	41	36	25	17	16
36	High	52	54	54	50	46	41	27	24
	Med	48	51	49	46	42	34	22	19
	Low	45	50	47	44	39	31	19	18

LEGEND

SPL — Sound Pressure Level

NOTE: Overall SPL measured at a distance of 5 ft below the fascia in free field, dry coil conditions, referenced to 2 x 10^5Pa.

Electrical data

42WKN UNIT SIZE	STANDARD UNITS			
	V-Ph-Hz	MCA	FLA	Recommended Fuse (Amps)
08,12	208/230-1-60	0.74	0.65	10
18,20	208/230-1-60	0.99	0.85	10
33,36	208/230-1-60	1.40	1.30	10

42WKN UNIT SIZE	UNITS WITH OPTIONAL ELECTRIC HEAT*					UNITS WITH OPTIONAL STEP-UP TRANSFORMER†			
	V-Ph-Hz	Electric Heat Capacity (kW)	MCA	FLA	Recommended Fuse (Amps)	V-Ph-Hz	MCA	FLA	Recommended Fuse (Amps)
08,12	208/230-1-60	1.5	8.9	7.2	15	115-1-60	1.5	1.3	10
18,20	208/230-1-60	3.0	19.3	13.9	20	115-1-60	2.0	1.7	10
33,36	208/230-1-60	5.0	28.8	23.1	30	115-1-60	2.8	2.5	10

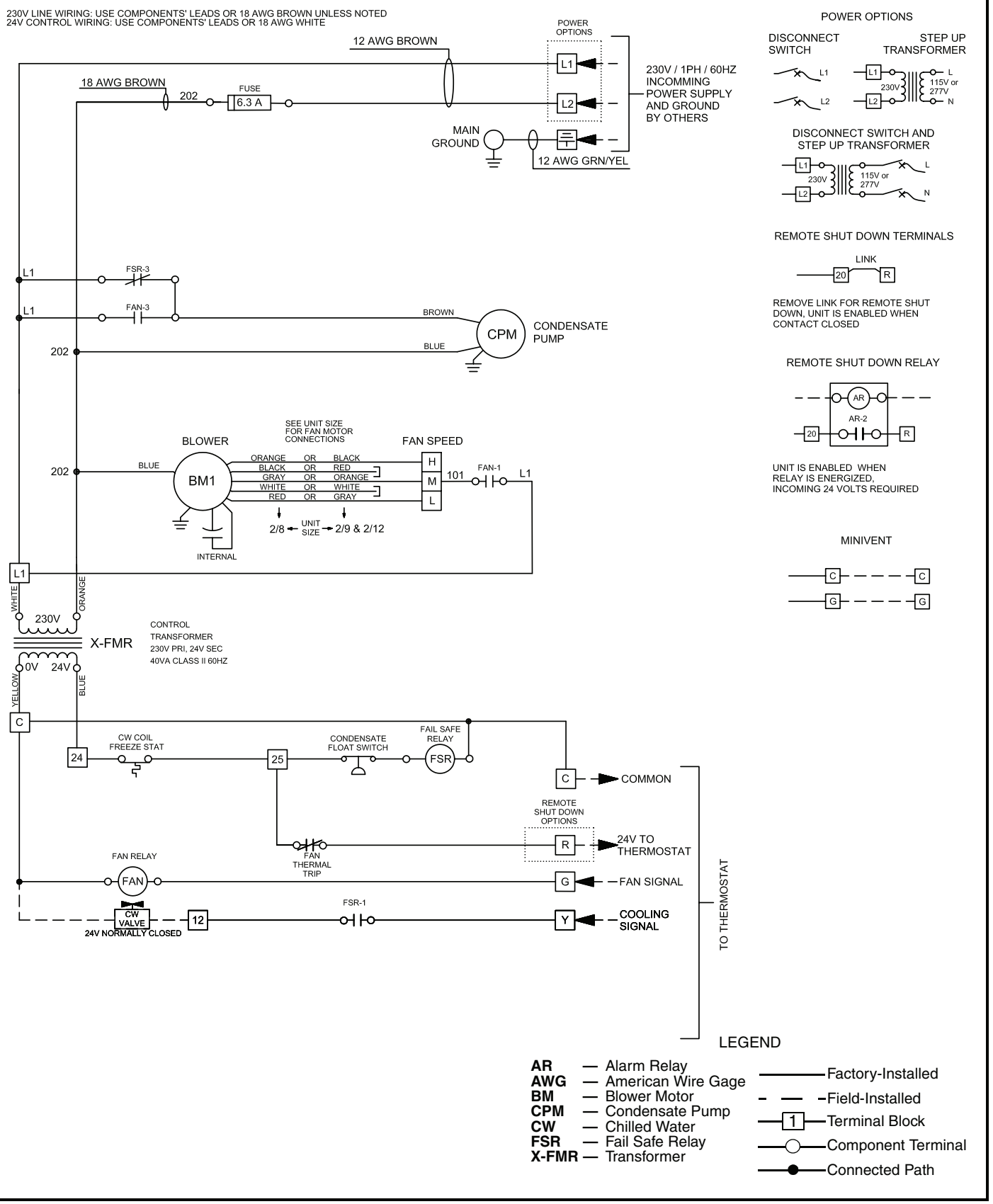
LEGEND

FLA — Full Load Amps
MCA — Minimum Circuit Amps

*Standard unit fitted with optional electric heating elements. Available with 230-v model units only.
†Standard unit fitted with optional step-up transformer for connection to a 115-v electrical supply. Electric heat not available in conjunction with this option.

Typical wiring schematic

ELECTRO-MECHANICAL CONTROL OPTION TYPICAL WIRING SCHEMATIC



Controls

Sequence of operation

Electro-mechanical controls — A 24-v signal from the thermostat to terminal G supplies power to the blower motor(s), condensate pump and vane motor (if equipped). A toggle switch on the control box can be used to switch the oscillating vanes on or off. The condensate pump will run continuously, as long as the blower is energized. A call for heating, at terminal W, or cooling, at terminal Y, will energize the water valve actuator and allow water to flow through the cassette coil. When the call for heating or cooling is satisfied the valve will close.

If the temperature drops below the set point of the coil freezestat, the water valve with automatically open to circulate water through the coil.

If the condensate float switch detects a high level of water in the condensate tray, the switch will open, activate the condensate pump and disable the heating/cooling signal until the water level drops down to normal.

Product Data

42C,D,S,V Series Fan Coil Air Conditioners 50/60 Hz

150 to 2000 cfm

Carrier's 42C,D,S,V Series fan coil units offer:

- Design flexibility, occupying minimum space
- Easy, low-cost installation
- Permanent split capacitor motors deliver peak operating efficiency
- High performance, low cost
- Greater zone comfort control

Features/Benefits

Carrier's extensive range of superior fan-coil units combine design flexibility with easy, low-cost installation.

Versatility

With Carrier's 42 Series fan coils, you can select from 6 horizontal, 6 vertical, 5 ducted or 5 stacked models; furred-in or cabinet style, slant top or low silhouette, in 150 through 2000 cfm capacities. Coils are available with 1, 2, 3, 4, or 5 rows (depending on model), to satisfy a variety of application requirements. The units are ideal for installation in motels, apartments, and other multi-room buildings. Many optional control packages are available, including 2-pipe heating and cooling, 2-pipe heating and cooling with auxiliary electric heat, 2-pipe cooling with total electric heat, and 4-pipe heating and cooling. Also offered are manual and automatic changeover controls and several thermostats.

Casings and frame are fabricated from tough, heavy gage galvanized steel. Optional decorative colors allow the unit to blend with any interior design.

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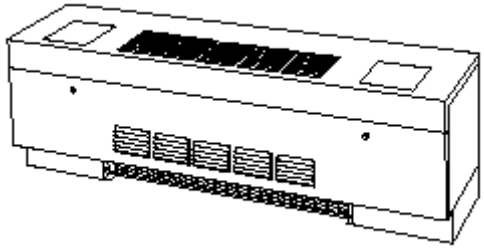
Unit Report For FC- 89 93 94 97 98

Project: LAKELAND COLLEGE NE HALL
Prepared By:

02/12/2013
07:59AM



Unit Parameters

Tag Name:	**FC- 89 93 94 97 98**
Quantity:	**7**
Unit Model:	**42VEA02ALCY5AYYY**
Unit Type:	**42VE Vertical, Lo-Boy, Cabinet**
Unit Size:	**200 CFM**
Shipping Options:	**Standard**
Fan Speed:	**Low**
Motor/Drive:	**Standard**

Dimensions

Unit Length:	**12.25**	in
Unit Width:	**41.00**	in
Unit Height:	**14.38**	in
Shipping Weight:	**72**	lb

Coil Parameters

System Type:	**2-Pipe Heating and Cooling**
Cooling Coil:	**Cold Fluid Cooling**
Cooling Coil Rows:	**2 rows**
Coil Hand:	**Left Hand**

Electrical

Motor Voltage:	**120-1-60**	V-Ph-Hz

Warranty Information

First Year - Parts Only (Standard)

Ordering Information

Part Number	Description	Quantity
Base Unit		
	42VEA02ALCY5AYYY	7
	42VEA02:Vertical, Lo-Boy, Cabinet Fan Coil Unit 200 CFM Cooling 120-1-60	
	Units shipped on treated wood pallet	
	Line Voltage Tstat by Others	

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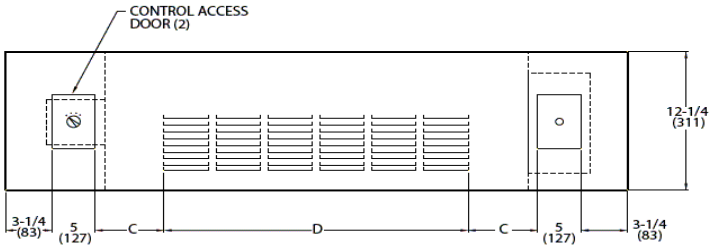
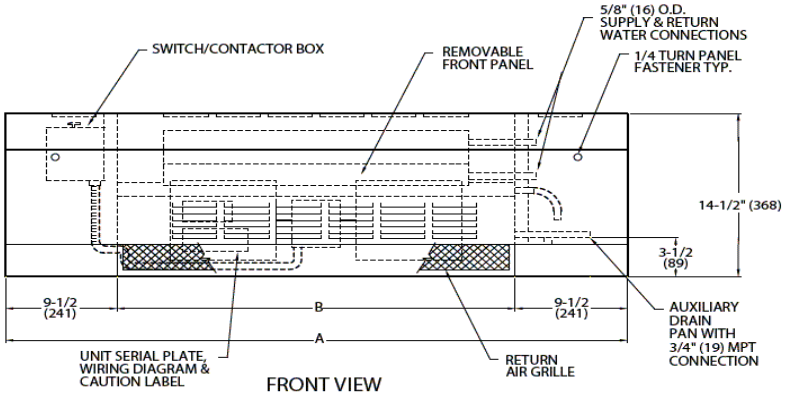
VERTICAL LOW-BOY CABINET UNIT WITH TOP SUPPLY & FRONT RETURN

42VEA

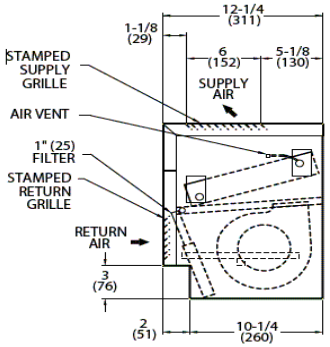
NOTE:
1.R.H. shown, L.H. opposite.
2.All dimensions ±1/4".
3.Cabinet finish is Arctic White polyester powder coat paint



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

UNIT MODEL	NOM CFM	DIMENSION - INCHES				FILTERSIZE (in)	QUANTITY/UNIT	
		A	B	C	D		BLW R	MOTOR
42VEA02	200	41	22	3-3/4	17	7-3/4 x 21-3/4	2	1
42VEA03	300	46	27	4	21-1/2	7-3/4 x 25-3/4	2	1
42VEA04	400	54	35	3-5/8	30-1/4	7-3/4 x 31-3/4	2	1
42VEA06	600	68	49	4-1/16	43-3/8	7-3/4 x 41-3/4	4	2

JOB NAME

JOB NUMBER

DATE
02/11/2009

Carrier

DRAWING NUMBER
42VE-202-1

REVISION
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1 OF 1

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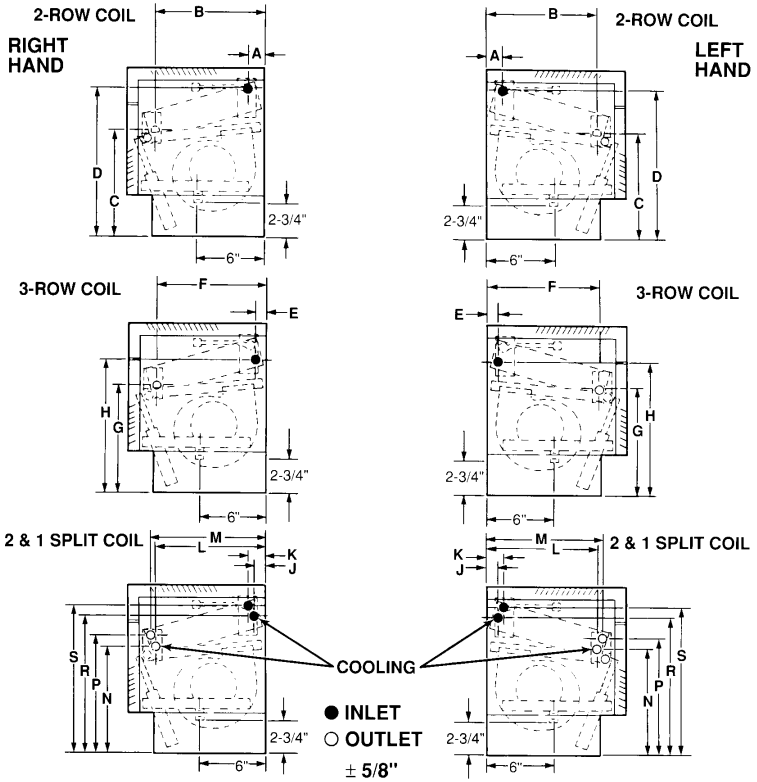
42VC, VE OPTIONAL COIL CONNECTION LOCATION SIZES 02 THRU 06

42VC



NOTES:
1. Dimensions for split coils with opposite end connections will vary.
2. Coil connection dimensions are for coil stub outs only (valve packages not included).

COIL CONNECTION DIMENSIONS

	UNIT SIZE	2-ROW COIL				3-ROW COIL				2 & 1 SPLIT COIL							
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S
Right Hand	02	1	10-3/8	10-7/16	11-1/4	1-5/16	10	8-3/8	12-1/2	7/8	1-15/16	10-1/8	9-3/4	9-1/2	10-9/16	10-1/4	12-3/8
	03	1	10-3/8	10-7/16	11-1/4	1-5/16	10	8-3/8	12-1/2	7/8	1-5/16	10-1/8	9-3/4	9-1/2	10-9/16	10-1/4	12-3/8
	04	1	10-3/8	10-7/16	11-1/4	1-1/2	9-3/4	8-15/16	11-7/8	7/8	1-5/16	10-1/8	9-3/4	9-1/2	10-9/16	10-1/4	12-3/8
	06	1-1/4	10	10	11-3/4	1-1/2	9-3/4	8-15/16	11-7/8	1-1/4	1-5/16	9-3/4	9-3/4	8-15/16	10-9/16	10-3/4	12-3/8
Left Hand	02	1-1/4	10-3/16	9-1/4	12-3/8	1-5/16	10	8-3/8	12-1/2	1-1/16	1-15/16	10	10-3/8	10-3/8	10-1/2	11-3/8	12-3/8
	03	1-1/4	10-3/16	9-1/4	12-3/8	1-5/16	10	8-3/8	12-1/2	1-1/16	1-5/16	10	10-3/8	8-3/8	10-1/2	11-3/8	12-3/8
	04	1-1/4	10-3/16	9-1/4	12-3/8	1-1/4	10	10	10-3/4	1-1/16	1-15/16	10	10-3/8	8-3/8	10-1/2	11-3/8	12-3/8
	06	1-7/16	10	10	11-3/4	1-1/4	10	10	10-3/4	1-1/4	1-15/16	9-3/4	10-7/16	8-15/16	10-1/2	10-3/4	12-3/8

JOB NAME

JOB NUMBER

DATE 09/26/2003

DRAWING NUMBER 42VC-203-1

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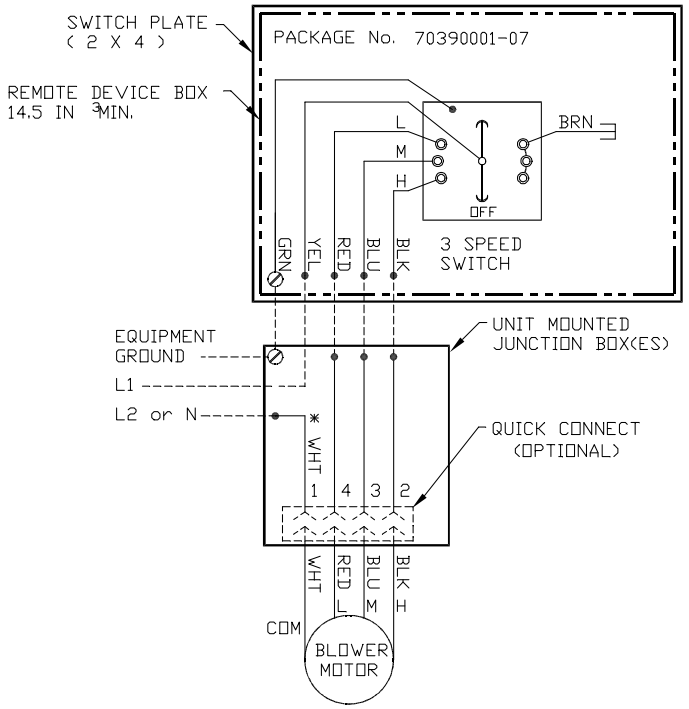
WALL MOUNTED 3SP.SW.ONLY (ALL 42C,V UNITS SINGLE MOTOR 42D UNITS)



TYPICAL CONNECTION DIAGRAM FIELD WIRING REQUIRED

NOTES:

1) CAUTION : DISCONNECT POWER BEFORE SERVICING.
2) SEE NAME PLATE FOR CORRECT VOLTAGE, USE 75°C MIN. COPPER CONDUCTORS ONLY.
   UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT ANY OTHER WIRING.
3) MOTOR(S) THERMALLY PROTECTED.
4) PROVIDE DISCONNECT MEANS & OVERCURRENT PROTECTION AS REQUIRED.
5) *USE WHT FOR 120/277V. USE RED FOR 208/240V.
6) UNITS WITH 2 MOTORS , MOTORS WIRED PARALLEL.
7) MOTOR SHOWN FOR 120/277V OPERATION, FOR 208/240V MOTOR COMMON IS ORG OR YEL.

WIRE CONNECTION
WIRE TAPED
FACTORY WIRING P.L
FACTORY WIRING C.L
FIELD WIRING

JOBNAME	JOBNUMBER	DATE	DRAWINGNUMBER	REVISION	SHEET
		06/26/2002	42C,V,D-Y-70338901	NEW	1OF1

Performance Summary For FC- 89 93 94 97 98

Project: LAKELAND COLLEGE NE HALL 02/12/2013
Prepared By: 07:59AM

Unit Parameters

Tag Name:	**FC- 89 93 94 97 98**
Quantity:	**7**
Unit Model:	**42VEA02ALCY5AYYY**
Unit Type:	**42VE Vertical, Lo-Boy, Cabinet**
Unit Size:	**200 CFM**
System Type:	**2-Pipe Heating and Cooling**
Cooling Coil:	**Cold Fluid Cooling**
Cooling Coil Rows:	**2 rows**
Heating Coil:	**Hot Fluid Heating**
Coil Hand:	**Left Hand**
Coil Wrapping:	**None**
Shipping Options:	**Standard**
Fan Speed:	**Low**
Motor/Drive:	**Standard**

Unit Performance

Actual Airflow:	**125.0**	CFM
Altitude:	**0**	ft
External Static Pressure:	**.00**	in wg
Voltage:	**120-1-60**	V-Ph-Hz

Cooling Data

Coil Type:	**Cold Fluid Cooling**	
Coil Rows:	**2 rows**	
Fluid Type:	**Fresh Water**	
Total Capacity:	**3,653**	BTU/hr
Sensible Capacity:	**2,386**	BTU/hr
Entering Air Dry Bulb Temperature:	**75.0**	F
Entering Air Wet Bulb Temperature:	**63.0**	F
Leaving Air Dry Bulb Temperature:	**57.5**	F
Leaving Air Wet Bulb Temperature:	**52.9**	F
Fluid Flow Rate:	**1.3**	gpm
Fluid Pressure Drop:	**2.87**	ft wg
Fluid Entering Temperature:	**42.0**	F
Fluid Leaving Temperature:	**47.6**	F

Heating Data

Coil Type:	**Hot Fluid Heating**	
Fluid Type:	**Fresh Water**	
Sensible Capacity:	**7,945**	BTU/hr
Entering Air Temperature:	**60.0**	F
Leaving Air Temperature:	**118.1**	F
Fluid Flow Rate:	**1.3**	gpm
Fluid Entering Temperature:	**180.0**	F
Fluid Leaving Temperature:	**167.8**	F
Fluid Pressure Drop:	**2.14**	ft wg

Electrical Data

Motor Voltage:	**120-1-60**	V-Ph-Hz
Motor FLA (per motor):	**0.6**	

Acoustical Data:

Octave Band Center Frequency, Hz	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**dBA**
Sound Power Data								
Radiated Sound Power, dB	50	48	43	38	33	29	NA	45
Discharge Sound Power, dB	NA	NA	NA	NA	NA	NA	NA	NA

Factory-Installed Options

Unit Arrangement:	**Front Return / Top Supply**
Filters:	**Std 1 in. Throwaway**
Drain Pans:	**Standard Drain Pan**
Coil Hand:	**Left Hand**
AAV / Drains:	**Manual Air Vents only**
Control Packages:	**Line Voltage Tstat by Others**
Insulation:	**Std. Tufskin II Insulation**